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(54) Title: TARGET DETECTION IMPROVEMENTS USING TEMPORAL INTEGRATIONS AND SPATIAL FUSION

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(57) Abstract: A method for identifying potential targets as far away as possible is disclosed. In a simple background scene such as a blue sky, a target may be recognized from a relatively long distance, but for some high clutter situations such as mountains and cities, the detection range is severely reduced. The background clutter may also be non-stationary further complicating the detection of a target. To solve these problems, target detection (recognition) of the present invention is based upon temporal fusion (integration) of sensor data using pre-detection or post-detection integration techniques, instead of using the prior art technique of fusing data from only a single time frame. Also disclosed are double-thresholding and reversed-thresholding techniques which further enhance target detection and avoid the shortcomings of the traditional constant false alarm rate (CFAR) thresholding technique. The present invention further discloses improved spatial fusion techniques for target detection (recognition) employing multiple sensors instead of employing the more conventional single sensor techniques. If spatial fusion is implemented with more than three sensors, then target detection can be enhanced by also using post-detection techniques. Moreover, since the pre-detection and the post-detection technique are complementary to each other, a combination of these two integration techniques will further improve target detection (recognition) performance.